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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,318	06/15/2005	Andreas Johannes Gerrits	NL 021345	2734

24737   7590   02/15/2011
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER
GODBOLD, DOUGLAS

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
02/15/2011	PAPER

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PTOL-90A (Rev. 04/07)

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 10/539,318
Filing Date: June 15, 2005
Appellant(s): GERRITS ET AL.

MIcheal Marcin
Reg. No. 48,148
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 23, 2010 appealing from the

Office action mailed August 3, 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application: Claims 1-10.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of

rejection to be reviewed on appeal. Every ground of rejection set forth in the Office

action from which the appeal is taken (as modified by any advisory actions) is being

maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are

provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in

the Appendix to the appellant's brief.

(8) Evidence Relied Upon

5717821	Tsutsui et al.	2-1998
5,054,072	McAulay et al.	10-1991

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to

comply with the written description requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed,

had possession of the claimed invention. The new limitations added to claims 1, 8 and

10 specify that the "selecting" is performed :without regard to the at least one of the

candidate sinusoids within said local frequency band that is excluded. However this is

unsupported in the original disclosures. Pages 6-8 discuss the mathematics of defining

a band around candidates, combining amplitudes, and then performing the "selecting"

step. The selection step is performed using a ratio of the difference of the amplitude of

the candidate sinusoid minus the combined amplitude, over the standard deviation for

the band, see equation 8. No other frequency based selections are disclosed. Thus the

newly added limitations appear to be opposite the teachings of the specification and are

not supported by the original disclosure.

Claim Rejections - 35 USC § 102

Claims 1-5, 8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated

by Tsutsui et al (US Patent 5,717,821) from hereon referred to as Tsutsui2 to avoid

confusion with the Tsutsui reference used in the prior rejection.

Consider claims 1 and 8: Tsutsui2 discloses a method and audio encoder for

encoding an audio signal by representing at least part of said audio signal by a plurality

of sinusoids (see Abstract, frequency components are sinusoids by definition), the

method comprising the steps of:

performing an analysis on a first segment of said audio signal (waveform is

transformed to frequency components; column 10 lines 37-40);

selecting candidate sinusoids based on said analysis (N spectrum signals

inputted into tone separating component; column 12 line 24. A component is

considered when its amplitude is greater to that of surrounding amplitudes when locally

view; column 12 line 30);

defining for at least one of the candidate sinusoids a local frequency band around

a frequency of said at least one candidate sinusoid (neighboring spectrum components;

column 12 line 36);

combining amplitudes of frequency components within said local frequency band

from which at least one of the candidate sinusoids within the local frequency band is

excluded (Figures 4, Step 6, energy value of neighboring spectrum is summed; column

13 lines 3-6.); and

selecting said candidate sinusoid as a selected sinusoid in dependence on the

combination of amplitudes without regard to the at least one of the candidate sinusoids

within said local frequency band that is excluded (Steps S8 and S9, where ratio is

considered and tonality is registered; column 13 lines 3-35.).

Consider claim 2: Tsutsui2 discloses a bandwidth of said local frequency band

around the frequency of said at least one candidate sinusoid is defined in dependence

on the frequency of said at least one candidate sinusoid (Figure 5 shows the bands selected around frequency components B1-B5 that grow wider as they get higher, also column 2 lines 10-28).

Consider claim 3: Tsutsui2 discloses dependence on the frequency of said candidate sinusoid is based on a human's perception of audio (see column 2 lines 10-28, where Tsutsui discusses taking the characteristics of human hearing into account).

Consider claim 4: Tsutsui2 discloses candidate sinusoid is selected as a selected sinusoid when its amplitude of said candidate sinusoid is significant with regard to said combination of amplitudes (Figures 4, Step 6, energy value of neighboring spectrum is summed; column 13 lines 3-6.), said significance being evaluated by thresholding a difference between the amplitude of said candidate sinusoid and a weighted mean amplitude of frequency components within the local frequency band of said candidate sinusoid from which at least one of the candidate sinusoids within said local frequency band is excluded (Steps S8 and S9, where ratio is considered in regards to Threshold R and tonality is registered; column 13 lines 3-35, T).

Consider claim 5: Tsutsui2 discloses candidate sinusoid is selected as a selected sinusoid when an amplitude of said candidate sinusoid is significant with regard to said combination of amplitudes, (Figures 4, Step 6, energy value of neighboring spectrum is

summed; column 13 lines 3-6) said significance being evaluated by thresholding a ratio (X/Y) of:

a difference between the amplitudes of said candidate sinusoid and a weighted mean amplitude of frequency components within the local frequency band of said candidate sinusoid's local frequency band from which at least one of the candidate sinusoids within said local frequency band is excluded; (Figures 4, Step 6, energy value of neighboring spectrum is summed X; column 13 lines 3-6) and

a weighted deviation of the amplitudes of frequency components within said local frequency band from which at least one of the candidate sinusoids within said local frequency band is excluded amplitudes without regard to the at least one of the candidate sinusoids within said local frequency band that is excluded (absolute value of spectrum of band Y; column 13 lines 5-9).

Consider claim 10: Tsutsui2 disclose means for obtaining an audio signal (see Figure 1, 600), an audio encoder for encoding said audio signal to obtain an encoded audio signal (see Figure 1, 601-506), and

means for performing an analysis on a first segment of said audio signal (waveform is transformed to frequency components; column 10 lines 37-40);

means for selecting candidate sinusoids based on said analysis (N spectrum signals inputted into tone separating component; column 12 line 24. A component is considered when its amplitude is greater to that of surrounding amplitudes when locally view; column 12 line 30);

means for defining for at least one of the candidate sinusoids a local frequency

band around a frequency of said at least one candidate sinusoid (neighboring spectrum

components; column 12 line 36);

means for combining amplitudes of frequency components within said local

frequency band from which at least one of the candidate sinusoids within the local

frequency band is excluded (Figures 4, Step 6, energy value of neighboring spectrum is

summed; column 13 lines 3-6.); and

means for selecting said candidate sinusoid as a selected sinusoid in

dependence on the combination of amplitudes amplitudes without regard to the at least

one of the candidate sinusoids within said local frequency band that is excluded (Steps

S8 and S9, where ratio is considered and tonality is registered; column 13 lines 3-35.)

a formatting unit for formatting the encoded audio signal into a format suitable

for storage and/or transmission (606-609).

Claim Rejections - 35 USC § 103

Claims 6, 7, and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over

Tsutsui2 in view of McAulay et al (US Patent 5,054,072).

Consider claims 6 and 9: Tsutsui2 does not specifically disclose a further

selection out of the selected sinusoids which comprises the steps of:

determining for at least one of the selected sinusoids a phase consistency

defined by an extent to which a phase of said selected sinusoid at a certain moment in

time can be predicted from a phase of said selected sinusoid determined at another

moment in time; and

further selecting said selected sinusoid as a further selected sinusoid when its

phase consistency is above a predetermined threshold

In the same field of Audio Coding, McAulay teaches a further selection out of the

selected sinusoids which comprises the steps of:

determining for at least one of the selected sinusoids a phase consistency

defined by an extent to which a phase of said selected sinusoid at a certain moment in

time can be predicted from a phase of said selected sinusoid determined at another

moment in time (see Col. 2, lines 26 - 40 where McAulay discusses predicting phases

across frames and Col. 5, lines 10-20, where McAulay discusses the phase calculation);

and

further selecting said selected sinusoid as a further selected sinusoid when its

phase consistency is above a predetermined threshold (see Col. 7, lines 19-27, where

McAulay discusses phase modeling and a required minimum value, therefore a

threshold).

Therefore it would have been obvious to one of ordinary skill in the art at the time

of the invention to consider phase as taught by McAulay in the system of Tsutsui2 in

order to provide a more accurate and realistic sounding coded signal.

Consider claim 7: Tsutsui2 does not specifically disclose determining phase

consistency comprises the steps of:

segmenting a third segment of said audio signal into at least a first and a second part;

determining the actual phases of said selected sinusoid in at least the first and the second part;

using the actual phase in the first part to serve as the input for predicting the actual phase in the second part; and

determining said selected sinusoid's phase consistency based on a prediction error between the actual phase and the predicted phase in the second part.

In the same field of audio coding McAulay disclose determining phase consistency comprises the steps of:

segmenting a third segment of said audio signal into at least a first and a second part (see Col. 8, lines 4-10, where McAulay discusses pitch periods);

determining the actual phases of said selected sinusoid in at least the first and the second part (see Col. 8, lines 8-15, where McAulay discusses evaluating the phase after a determination);

using the actual phase in the first part to serve as the input for predicting the actual phase in the second part (see Col. 8, lines 30-35, where McAulay discusses determining residual phases); and

determining said selected sinusoid's phase consistency based on a prediction error between the actual phase and the predicted phase in the second part (see Col. 7, lines 30-40, where McAulay discusses selection based on minimizing the error).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the

invention to consider phase as taught by McAulay in the system of Tsutsui2 in order to

provide a more accurate and realistic sounding coded signal.

(10) Response to Argument

<u>I. Rejections under 35 U.S.C. 112</u>

Appellant argues, see Appeal Brief pages 4-5, that the 112 new matter rejection

is improper. The examiner respectfully disagrees. Applicant points to paragraph 0010

in specification to bolster his position that the claim language in claim 1, "**without**

regard to the at least one of the candidate sinusoids within said local frequency band

that is excluded. " is supported. However, paragraph 0010 discusses "at least one of

the candidate sinusoids within said local frequency band is excluded". The added

phrase, "without regard", in claim 1, changes the context of the claim scope such that

the claim scope now relates to a selection while ignoring/disregarding excluded

candidate sinusoids. However, Appellant highlighted phrase indicates a mean is

calculated of the amplitude of the weighted mean excluding the candidate sinusoid.

However, the sentence as a whole shows that the selection is based on the ratio **of the**

amplitude of the candidate sinusoid to the weighted mean amplitude of frequency

components…. with candidate sinusoids excluded. Thus although there is an exclusion

of the sinusoid in the denominator of the ratio, the sinusoid still appears in the

numerator. Therefore the selection described in the specification is performed using the

candidate sinusoid. Thus the selection is not made ***without regard*** to the candidate

sinusoid. Therefore the claim limitation lacks support in the specification.

II. Rejections under 35. U.S.C. 102 as anticipated by "Tsutsui2"

Appellant argues, see Appeal Brief pages 6-7, that Tsutsui2 does not anticipate

claims 1-5 8, and 10. The examiner respectfully disagrees. Tsutsui2 teaches a ratio

(x/y) .(see Co1. 13 lines 3-17). The "X" in the ratio is surrounding bands with the band

with the sinusoid excluded. Thus, denominator, Tsutsui2 clearly excludes the candidate

sinusoid from consideration. As pointed out by the applicant, X represented the sum or

energies of spectral components surrounding the candidate sinusoid. Surrounding does

not mean including. Thus in the denominator of the ratio, the candidate sinusoid is

clearly excluded. Thus, opposite what appellant argues, Tsutsui2 teaches excluding a

candidate sinusoid. Therefore, TsuTsui2 teaches "without regard to the at least one

candidate sinusoid within said local frequency band that is excluded."

III. Rejections under 35. U.S.C. 103

Examiner agrees that McAulay does not teach the "without regard" limitation.

However it is noted that TsuTsui2 was relied upon to teach this limitation

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the

Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Douglas C Godbold/

Examiner, Art Unit 2626

                                                                        /Richemond Dorvil/
                                                                        Supervisory Patent
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Conferees:

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